

Remarks/Arguments

Claims 1, 5-8, 11-24 remain in this application. Claims 2-4 & 9-10 have been cancelled. Claim 25 is newly added to define the invention using a Markush Group.

The Examiner's remarks in the Office Action mailed on April 9, 2003 have been carefully studied. Re-examination and reconsideration are respectfully requested.

The Invention

The claimed invention relates to a method for forming a lubricative film for the cold working of metal materials. As a result, the friction that occurs between a tool and a workpiece is reduced, thereby preventing seizure during cold working.

The present invention addresses performance drawbacks that may result from prior art approaches and avoids adverse environmental impacts that often accompany them (*e.g.*, sludge generation and waste liquid treatment. Problems of previous approaches that are addressed by the present invention are disclosed in the Specification between pages 2-4.

As filed, the Specification disclosed that on p. 5, lines 27-34:

“Metal substrate materials that can be used in the present invention include any electrically conductive materials, including ferrous materials such as carbon steel, chromium steel, chromium-molybdenum steel, nickel-chromium steel, nickel-chromium-molybdenum steel, stainless steel, boron steel, and manganese steel, and non-ferrous materials such as aluminum, magnesium, titanium, and copper.”

The Specification also provides examples:

“METAL SUBSTRATES USED

Substrates of carbon steel (Type S45C), austenitic stainless steel (Type SUS 304), and aluminum (Type A6061), . . . were cut into pieces . . . These were subjected to an electrolysis treatment and lubrication treatment by the procedures set forth below, after which performance tests were conducted.”

Specification, p. 12, lines 10-12.

None of the examples include a substrate of Ti or Ti alloys.

The Rejections

In paragraph 6 of the Office Action, claims 1, 5-8 & 11-24 were rejected under 35 U.S.C. § 1.112, ¶ 1 “as containing subject matter which was not described in the Specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s) at the time the application was filed had possession of the claimed invention.”

The Examiner observed that “Applicant has amended independent claims 1 and 22 to recite treating a metal substrate 'that is devoid of titanium and titanium alloys'. This added limitation is considered to constitute new matter. *Ex parte Grassilli* (231 USPQ 393,395). Basis for the limitation in the specification is not apparent.”

Basis for the limitation in the Specification as filed appears in the Examples. Specification, pp. 12-18. As noted above, none of the examples include titanium or a titanium alloy.

The scope of the claims should be commensurate with the scope of the examples. Thus, the amendments to claims 1 and 22 merely serve to comport the claims with the working examples.

The Examiner referred to the Specification paragraph on page 5, lines 22-26. The materials recited there serve as the basis for a Markush Group, which now appears as newly presented claim 25.

“Titanium” and “titanium alloys” do not appear in claim 25. Two of the choices for the materials of which the metal substrate are made are thus deleted from the protection sought. Thus, Applicants are claiming less than the full scope of their disclosure. It is for the inventor to decide what bounds of protection he will seek. *In re Saunders*, 444 Fed.2d 599, 607, 170 USPQ 213, 220 (1971). *In re Johnson*, 558 F.2d 1008, 194 USPQ 187 (1977) (exclusion from original claim of two species specifically disclosed in parent application does not render disclosure insufficient for a 'limited genus' claim.) See, also, *In re Wertheim*, 541 F.2d, 257, 263, 191 USPQ 90, 97 (CCPA 1976) (inventions are constantly made which turn out not to be patentable, and applicants frequently discover during the course of prosecution that only a part of what they invented and originally claimed is patentable.)

Applicants have become aware that they inadvertently disclosed in part the invention of another (Sonoda et al. '480), to which they are not entitled. They are not claiming “new matter”. *In re Johnson, supra*, 558 F.2d at 1019.

For these reasons, rejection is made to paragraphs 6 and 7 of the Office Action and are overcome.

In paragraph 8 of the Office Action, claims 1, 5-8 & 11-21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sonoda et al. in view of Shimakura et al. and Witte.

Claim 1 calls for “bringing said metal substrate that is devoid of titanium and titanium alloys into contact with an aqueous electrolyte solution . . .” Sonoda et al. states that “unfortunately, at the present time there is no satisfactory lubricant that is suited to the various working processes in the case of titanium and titanium alloys.” '480 Patent, 1:25-28.

Claims 5-8 and 11-18 depend from and incorporate the limitations of claim 1.

In addition to those differences, Applicants respectfully challenge the *prima facie* assertion of obviousness because of the differences between the cited references and the claimed invention as now claimed. As combined, the references fail to teach the claimed invention, even if properly combinable. Under § 103, the teachings of references can be combined only if there is some suggestion or incentive to do so (citations omitted). There is no such suggestion or incentive that is disclosed in any of the references which the Examiner proposes to combine. Nor is there any rationale expressed by which a person of ordinary skill in the relevant art would have been motivated to combine the references to arrive at the claimed invention.

In paragraph 9 of the Office Action, claims 22-24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sonoda et al. The Examiner observes that “. . . it would have been obvious to have applied the process of Sonoda to metal workpieces other than titanium or titanium alloy workpieces because the beneficial properties of improved lubricity and cold working characteristics would have been expected to be obtained.” Office Action, p. 4, ¶ 10.

Sonoda '480 indicates a lack of transference to ferrous substrates of processes that are unique to titanium-based substrates:

In cold working metal, use is generally made of a lubricant to impart lubricity, so as to prevent seizure, i.e., to prevent direct contact of a tool and material being worked. In the case of steel,

for example, oil containing an extreme pressure agent is used in comparatively light working and a soap or solid lubricant in addition to a phosphate to oxalate is used in heavy working. . . . Unfortunately at the present time there is no satisfactory lubricant that is suited to the various working processes in the case of titanium and titanium alloys.

'480 patent, 1:14-28.

Thus, Sonoda '480 lies in a non-analogous art. Titanium lies in Group IV of the periodic table. It typically exhibits the properties of a refractory metal that has a different crystal structure from that of metals outside Group IV. As a result, it is typically quite hard and resistant to deformation. In contrast, aluminum lies in column XIII of the periodic table; magnesium lies in column VII and copper lies in column XI.

Noteworthy also is that zirconium and hafnium -- other members of Group IV -- are not mentioned anywhere in the written description or in the examples.

Thus, the treatment of a titanium-based substrate require different engineering approaches and solutions from those that are appropriate to the metal substrate materials that are included in the examples. Simply stated, the teachings of Sonoda et al., which are unique to titanium and titanium-based alloys, are not teachings to which one of ordinary skill in the art would turn for a solution to the problems of performing a lubricative film for the cold working of metal materials that are free of titanium.

Accordingly, the rejection of claims 22-24 for obviousness based on Sonoda et al. are overcome.

All formal and substantive matters now appear to have been addressed. Accordingly, Applicants respectfully request a Notice of Allowability. If a telephone conference would expedite prosecution, the Examiner is invited to contact the undersigned.

A check in the amount of \$128 is enclosed to cover the Petition fee of **\$110 and the additional claims filing fee of \$18**. Please charge any additional fees or credit any overpayments as a result of the filing of this paper to our Deposit Account No. 02-3978 -- a duplicate of this paper is enclosed for that purpose.

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